

ABSTRACT

There is disclosed a fractional-spaced equalizer (FSE) that is capable of performing joint intersymbol-interference (ISI) cancellation and matched filter (MF) processing. The FSE employs a constrained optimization technique to control the out-of-band frequency response of the equalizer's FIR while, at the same time, controlling the pass-band and roll-off of the FIR to cancel ISI. The format of the constrained optimization technique permits a single bank of multipliers elements to service the inner product computations associated both with the ISI cancellation and MF operations. This time-multiplexing technique promotes a conservation of hardware associated with the MF, and provides for a reduction in the computational complexity leading to an increase in power efficiency.